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(List continued on inside back cover)

BENN'S SIXPENNY



ARCHÆOLOGY

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ARCHÆOLOGY^m

CHAPTER I

HISTORICAL

THERE is only one name for the study of the material objects of the human past, and that is "archæology." Those who devote their main interests and capacities to this study are archæologists. The word is an ancient one, not one of modern composition, like entomologist or seismologist. Ancient Greek authors not infrequently used the term in describing the pursuits and characteristics of well known men. Thucydides, after all, wrote a preliminary chapter on Archæology to his great *History*, and he must always rank as the first scientific archæologist. But in Greece no one was ever greatly interested in the past. To Greeks the present was exciting enough to keep them fully occupied, and the future was rarely without elements of uncertainty sufficient to keep most men from retrospective considerations.

As Greece grew old, Greeks began to look back, and, looking back, to inquire into the habits and manners of earlier ages. Yet, with all their curiosity, it is strange that they rarely explored periods anterior to the seventh, eighth, or ninth centuries B.C. Thucydides was almost the only writer before the Christian era who attempted to penetrate into remoter periods, and who adopted, in however simple a fashion, the correct methods of archæology.

After Thucydides we hardly meet with the same

the fullest investigation of all possible contacts it may have with other branches of knowledge and other periods of history

It is, on the whole, surprising to find how little the ancients knew of their earliest history or of their prehistoric periods. The eleventh, tenth, and ninth centuries in Greece were infinitely darker and more obscure than the Saxon period or the Celtic period is to us. This Dark Age was, for Greeks, filled almost entirely by one great figure—Homer. And the prehistoric period, which archæology has recently revealed to us, the great civilisation of Minoan Crete and Mycænan Greece, was to the Classical Greeks virtually unknown. A name here and there—Minos, Rhadamanthos, Talos, and a few others—an uncertain tradition of an ancient Minoan maritime supremacy, and that was all. Here and there the authentic Minoan past obtruded itself by chance before the eyes of Greeks and Romans, only to be relegated to uncertainty and put aside as unidentified.

Plutarch tells us in his *Genius of Socrates* how a tomb at Haliartos, in Central Greece, was once opened. In it were found vases and "a tablet in bronze," inscribed in an unknown tongue. The local "Society of Antiquaries" of Haliartos, unable to make head or tail of what they had found, sent their discoveries to the great experts of antiquity in all ancient things—the Egyptians. The Egyptian priests pondered these discoveries and sent an answer which was satisfactory to the senders, but which to us, with the superior knowledge that we possess, is evasive and vague, and obviously an answer devised to disguise ignorance. They said that the writing belonged to the age of the Trojan War, and that it contained an appeal to the Greeks to study literature and philosophy instead of warfare! But we can be certain—or, in default of actual proof, it would be better to say almost certain—that the grave was a Minoan or Mycænan grave, that

Attalids, and what were its subsequent adventures, we hear how at the sack of Corinth, after the siege by Mummius, an auction was held of works of art, and how, when the price bid for one picture rose swiftly to about ten thousand pounds, the Roman General Mummius stopped the auction in alarm and confiscated the lot sold, "suspecting," we are told, "that there was some virtue in the picture which he was unable to detect." Thus collecting began early to stimulate an interest at least in the works of art of the past, and this interest, in turn, led to a search for lost, buried, or forgotten works of art for the art dealers of Rome and Alexandria. The ruins of Corinth, after Mummius had left it desolate, were for long the happy hunting ground of looters of ancient *objets d'art et de vertu*. *Nekrokorinthia* was a Greek term which meant, simply enough, vases looted from old Corinthian graves, objects which, in age, would then have corresponded relatively with our own mediæval

Apart from the critical use by Thucydides of archaeological material, there had so far emerged nothing that could be called archaeology in the modern sense. For archaeology to-day is not merely a "study of the past", the word has come to have a more specialised meaning. Archaeology is a study of the past in the light, not of some of its more important material survivals, but in the light of *all* the objects, important and unimportant, that belong to that period. Therein lies the difference between the antiquary and the archaeologist. The former is a dilettante who picks and chooses what interests him, studies it in the special light of his own interests, and is not necessarily deeply interested in the general implications of what he is studying or in its contributions to the general course of history. The archaeologist, on the other hand, employs scientific methods of inquiry as far as he can, in order to reconstitute the complete history of the particular period or subject of his inquiry, at the same time with

curious and investigating mind until the middle of the first century a c Strabo the Geographer, clear minded, highly critical, and sceptical in outlook, used evidence that was sometimes archæological and displayed precisely that curiosity which might, had he been sufficiently interested, have led him to investigate problems on the lines of Thucydidean archæology About two hundred years later—i.e. A.D. 150—Pausanias, traveller, sightseer, collector of legends and myths, art connoisseur and curiosity hunter, voyaged leisurely round the various cities of mainland Greece and compiled the first learned guidebook ever written His work is in no sense literary and is wholly devoid of the scientific acumen of the Geography of Strabo, but as a painstaking record of all that he saw and heard it would be hard to excel Impartially minded, he moved slowly from place to place in a very limited area, noting, commenting, and quoting with such a wealth of fact and detail that his books remain for students of the Classics an almost inexhaustible store house of information He had many preferences, but few prejudices He had the *flair* of an archæologist without archæological method he had good taste in art and a clear eye, and he has left us more than we might have hoped for His affection for Greek sculpture of the Archaic period has left in his books countless references of inestimable value to students of Greek art, in fact, he is almost our only repository of information on the archaic period But he is an archæologist *malgré lui* and that, for our purposes, is not of the highest value Pausanias is rather an antiquary than an archæologist

So it is with many Romans and Greeks of the historic period Collecting works of art became the fashion in the Hellenistic period, when the Princes of Pergamum started to form libraries and galleries of art We are told how the first private library ever formed—that of Aristotle—fell into the hands of the

the tablets were inscribed in the Minoan script, at present undecipherable, and that the vases and other objects were of the same period. For Haliartos lies in the neighbourhood of Boeotian Thebes, where examples of Mycenaean script have recently been discovered, and where many things of the Minoan and the Mycenaean periods have been found in a palace which was built in Minoan times. Thebes, and with it the great walled city of Orchomenos and the island city of Gla, have been firmly identified as the principal strongholds of Minoan and Mycenaean power in a province of Central Greece, which virtually formed a separate prehistoric state from that in the Argolid in the south, and which was the farthest northern extension of the mainland Mycenaean power.

It seems probable, also, that another similar find of Minoan inscribed tablets was made in Roman times, on the very site which was later to be identified as the greatest Cretan city of Minoan Crete. We are told in the Latin introduction to the works of Dictys Cretensis, citizen of Cnossos, whose *Trojan War* survives in an alleged Roman translation by a certain Lucius Septimius, that the originals of the history were found by chance at Cnossos. An earthquake having laid bare a tomb which proved to be that of Dictys himself, shepherds, seeking loot, searched it and found tablets inscribed with unknown letters. They were obtained by the local Roman consul and were sent to the Emperor Nero, who, "recognising that they were written in Phœnician letters," sent them for translation to experts. The result was a text which was first translated into Attic Greek and then into Latin. It survives only in the latter version.

Whatever we may think of the story, it bears a striking resemblance to that of the tomb of Haliartos. In all probability the story of the earthquake and the chance discovery of tablets inscribed in an unknown tongue at Cnossos has attached itself to the work of

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carefully considers *all* the evidence and not some only. Written records and family trees are but part of his stock in trade. He concerns himself with all the countless things that make up the everyday life of a period.

With the fall of the Roman Empire, and the gradual formation through unruly and uncertain times of various Christian States that later culminated in the Orthodox Byzantine Empire of the east and the Papacy of the west, any thought of antiquity vanished and faded. Pilgrimages to the Holy Land led to the growth of a kind of Biblical antiquarianism of an illiterate and uninteresting kind, and no scholar was to be found who could even note in the simple manner of Pausanias the various things he saw. One solitary figure stands out as a fine traveller and scholar, Cyriac of Ancona, who explored parts of the Levant and Italy in the early fifteenth century, impressed with the necessity of recording inscriptions, monuments and other remains which he saw only too well, would soon perish in the general neglect and decay of the times. Cyriac can rank as an archaeologist even more than Pausanias, since he faithfully records *everything* that he saw at any given place.

With the sixteenth century antiquity had come into high favour. Byzantium, by her continuous beneficial contact with a barbarous West, had shown to Europe her accumulated glories of ancient art and culture, her manuscripts of ancient authors, and her Greek and Roman statues, jewels, and paintings. Italy was not slow to take advantage of the culture offered to her, and as early as the Fourth Crusade in 1204 had most effectively arranged the transference by force to Venice of much that Byzantium had displayed. Old Dandolo's flamboyant Holy Crusade to save Christendom was never to do more than loot Christendom's capital, but that looting, even though it was most effectively done by a body of the most barbarous soldiery of

Christendom itself, indicated to an increasingly artistic people in Italy, by the very dispersal of ancient art, that antiquity had much to teach. From the Fourth Crusade must date the earliest interest in the past which later was to flower as the Renaissance of Art. After the fall of great Byzantium to the invading Turks in 1453, travellers who had just begun to visit the city during the hundred years before its fall continued to do so after its capture, though with great difficulty and in the face of many impediments. Of such travellers a Frenchman, *Pierre Gylles*, can claim, without dispute, to have been the first competent student of the archæology of Constantinople. His book, published at Lyons in 1562, is a model of close and accurate observation, which few modern travellers could equal. He searched the city from end to end and noted carefully and methodically every vestige of antiquity that showed above the surface. I have no doubt whatever that, had Gylles carried out excavations, he would have done them with the maximum of competence and accuracy. His book remains to-day, after nearly four centuries, in some respects the most useful still to be found on Constantinople. Even the measurements of certain monuments that he gives are accurate to within the fraction of a centimetre.

Unfortunately, an intelligence such as that of Gylles was as rare among sixteenth-century travellers as it is among travellers of our own times, and the interest of books such as his *De Topographia Constantinopoleos* served more to excite the ambitions of the collector than the scientific tastes of the learned. Once it was known that Constantinople, Rome, and many another ancient city was built upon a soil that was rich with treasure, and that among the decaying monuments of a past age there was much still left for the adornment of the houses of the noble and the parks of the rich there arose, as always under such circumstances, the

busy swarms of looters, dealers, agents, and buyers—the whole stock in trade of the antique art dealer. Then began the most wholesale scraping, delving, and dismantling over the length and breadth of Italy and the more accessible regions that the history of Europe has ever seen. Ambassadors vied with each other in obtaining for influential friends the greatest number of ‘marbles’ and “relievos.” Sir Thomas Roe, His Majesty’s Ambassador at the Sublime Porte, has left for us a most diverting account of his attempts to obtain, for the collections of the Earl of Arundel, certain reliefs in marble which still decorated the exterior of the Golden Gate at Constantinople. A certain William Petty was the agent of the Earl, and he and Sir Thomas made most earnest endeavours in 1625 to obtain the marbles. In the end all the intrigues and plots of the two Englishmen, which involved bribery and corruption of those in the highest quarters, were stultified by the populace of Stamboul, who rose as a man and refused to let their sculptures go. This they did, not because they in any way admired them, but merely because they thought that they brought luck and that to have them removed would mean that the luck of the city departed. In the words of Sir Thomas, “It is true, though I could not get the stores, yet I almost raised an insurrection in that part of the city.” So there they remained to moulder away, and recent excavations have revealed only the most trivial fragments surviving from the twelve fine reliefs that originally stood there.

The sixteenth century had seen the growth of collectors both among princes and among ordinary men of moderate wealth. In Italy the demand for antique marbles and bronzes increased with their discovery. Many well known works have been in collections from very early times. The Apollo Belvedere was discovered in the fifteenth century, and the Etruscan Chimæra of Arezzo, now at Florence in the Museo Archæologico

in the middle of the sixteenth. In the memoirs of Benvenuto Cellini we learn, almost for the first time, the word "grotesque," which in its original use meant, simply enough, "something found in a grotto," and the term was usually applied to cameos, intaglios, small bronzes, and terra-cottas which had been found by peasants in old Etruscan tombs. The first Etruscan tombs were found in the sixteenth century, perhaps even earlier, and there seems little doubt that their astonishing tomb-frescoes had a profound influence upon the art of the Renaissance. In fact, there is fairly positive proof that Michelangelo actually used certain unusual Etruscan types in some of his drawings,* and there is every probability that the early Renaissance type of Devil in religious scenes in Italian painting was directly derived from the deities of the underworld of terrific aspect, which are seen on the walls of any of the Etruscan tombs of the later periods (fourth and third centuries B.C.). As tourists and strangers began more and more to flock to Florence and Rome, the antiquity dealer arose once again, flourishing, as he always does, upon the ruins of past ages. Artists also bought small antiques to serve them as guides in taste or as inspirations in design.

Many books of antiquarian interest, which were intended as surveys of the antiquities of various cities of Europe, were published in the sixteenth and seventeenth centuries. In England, Camden's *Britannia* will always hold a high place, and Stow's great work on London, *A Survey of London, 1598* had and retains a high reputation. But none ever reached the high archaeological standard of Pierre Gylles' work on Constantinople. In any case, the day of *Mirabilia* was over: men were anxious to learn facts, not marvels. Guide books and carefully annotated lists of ancient monuments replaced the Marvels and Bestiaries which

* F. Poulsen *Etruscan Tomb Paintings* (1922) p. 51

had pandered to the more puerile tastes of a more Papal Middle Ages

Even the Orient began to absorb some of the curious interest in *Realien* that marked the Renaissance Evliya Chelebi, a Turk of distinction and intelligence, has left us a curious and informing book upon the Turkish Empire under Suliman the Magnificent (1520-1566) In the course of his survey he gives us most valuable information about the monuments of Constantinople and of other places in the Turkish Empire His accounts lack the precision and accuracy of Occidental work, but they have, nevertheless, distinct value

The eighteenth century saw the establishment of the Grand Tour as the finishing school for English gentlemen The great wealth of English nobility led to an increase in the collections already in existence and the formation of many new ones, resulting also in the foundation in 1734 of the Society of Dilettanti The marbles of Lord Aberdeen, of the Marquis of Lansdowne, and of the Earl of Egremont—who was the founder of the Petworth Collection—are examples of many collections formed in the middle and second half of the eighteenth century So, too, at the close of the century, Sir W. Hamilton at Naples began the collection of Greek vases which not only had and deserved a very high reputation, but acted as a profound influence on the decorative arts of England Together with the first opening of Pompeii, and the discovery there of the first Roman wall painting, there emerged a considerable quantity of ancient works of art, mostly either Hellenistic Greek or early Imperial Roman, which gave a tremendous impetus to the new styles that were germinating in Europe The French Empire style and the decorative style of the brothers Adam in England drew almost exclusively from these new sources Similarly, English silversmiths at the close of the eighteenth century abandoned almost completely

the traditional Georgian styles, which were themselves normal developments from the lovely styles of Jacobean times, and devoted themselves to this new and striking neo-classical manner. Greek cups from Etruscan tombs served as models for salt-cellars and sauce boats. Greek palmette and acanthus and egg and-dart designs constitute the major part of the repertoire of craftsmen of this period, in plaster work, in silver embossing, and in wood-carving.

Pompeii, Herculaneum, and Etruscan tombs were now the great fields of research, but it cannot yet be said that excavations were carried out with any purpose but that of loot and treasure. Pompeii and Herculaneum, being sites suddenly overwhelmed in clouds of ashes and not slowly silted up by the deposits of ages, called for no very scientific methods in their excavation. But, even so, much damage was done and much was destroyed that might have been preserved. A comparison of the earliest excavations at Pompeii with those now being carried out will show how much more is now being saved—as, for instance, the upper stories of houses, which nowhere exist in the earlier excavations. So, too, in the clearance of Etruscan tombs incredible damage was done. The tombs were, for the most part, exploited by small groups of looters who bought their concessions and then dug for the treasure. By the destruction or loss of what these looters considered unimportant, irreparable harm has been done. It has, in fact, only been possible in the last few years to establish approximately the chronology of Etruscan archæology, despite the enormous mass of Etruscan objects in existence. Nor has it yet been possible at all to reconstruct the Etruscan language or to understand its inscriptions, although several hundred exist. Yet during the course of these tomb robberies, recklessly carried out and hastily done, possibly some priceless bilingual inscription, and certainly much ceramic evidence of priceless chronological value,

has been thrown away by the excavators, whose eyes were trained only to see fine vases, gold cups and jewels, and statuettes. So many, and certainly the most important, of the Etruscan tombs were excavated in this way that the greatest care of a subsequent generation has been insufficient to repair the errors of the earlier.

The close of the eighteenth and first decades of the nineteenth centuries saw a continuation upon more intelligent lines of the methods and aims of the eighteenth. The Society of Dilettanti had financed an important mission of architects to study and draw many of the principal buildings of Athens and Asia Minor.* Between 1764 and 1852 the Society spent £30 000 on work of this kind. Similar missions were sent by the French Academy, which had about this time begun to interest itself in ancient epigraphy and architecture. Finally, Lord Elgin, still true to the tradition of the great collectors, but yet controlled by a more scientific outlook, made the largest raid upon antiquity yet attempted, commencing in 1801. Subsequent generations have been quick to label him as vandal and to accuse him of mere looting, but he was careful in no way to endanger the buildings that he stripped of their sculptures, and he made the most scrupulous records of what was standing in the buildings before he removed his treasures. It must be remembered that at the time when he was at Athens the temples of the Acropolis were in daily jeopardy. The Acropolis itself was a Turkish fortress always liable in times of war to bombardment and damage, even as it was in the time of Morosini in 1687, when the explosion of the Turkish arsenal within the Parthenon did more damage in a moment than the passage of time had effected in many centuries. Nor was the danger which the Acropolis suffered confined merely to war risks.

* The superbly produced *Antiquities of Athens* and *Ionian Antiquities* were the results of these missions.

The presence of the Turk near any ancient building where the human form is depicted in sculpture, in painting or in mosaic inevitably brings about the destruction, casually but none the less deliberately, of what survives from antiquity. The sight of a human figure or a human face was always an irresistible temptation to Moslems to destroy it, either by hacking with an axe or by hurling rocks at it, or, best of all, by firing at it. A close examination of many of the surviving fragments of the Parthenon and Erechtheum sculptures reveals the clear traces of bullet marks on many of the faces and figures, and an inspection of the monuments of Constantinople alone will show how paltry are the surviving fragments of the immense treasures of Greece and Rome that once stood there.

In the early nineteenth century there were few enough places open to archæological travel and inquiry, and hardly any open to excavation. Italy was the chief centre, and gradually Italy was examined from one end to the other. Elsewhere research was of the greatest difficulty. Practically the whole of the *Turkish Empire was closed to infidel scholars*. Greece, apart from the visit of Lord Elgin, was a sealed book. Constantinople itself was a Mecca so inviolate that the only small piece of research ever carried out there before 1927 by Turkish favour was the clearance made in 1854 at the base of the famous bronze Platæan Monument in the Hippodrome—and this was done only because of the very favourable Anglo-Turkish relations established during the Crimean War. Elsewhere archæological research hardly existed, except in Egypt, and there it had only begun as a result of the patronage of Napoleon. Romano-British archæology was not even in its infancy. The superb Roman remains of Southern France excited little or no curiosity. Spain and North Africa were untouched, American, Indian, and Chinese antiquity were wholly unexplored.

Nor, until the thirties and forties, was any interest shown in any branch of prehistoric archæology or research. And, even so, the Palæolithic period was unknown, and the Neolithic remains of Europe given a chronology which was uncomfortably controlled by Biblical datings.

The final success of the Greek revolt against Turkish supremacy in 1829 laid the whole of that country open at last to research and inquiry. To Greeks must be given the priority, not only in genuine archæological research, but in that generous attitude to foreigners which has made it possible for the science of archæology to develop upon congenial soil. As early as 1830, and again in 1835, steps were taken by the Greek authorities to clear the Acropolis of its superimposed Turkish accretions and to reveal unencumbered the three great buildings, the Parthenon, the Erechtheum, and the Propylæa. About the same time a great bastion which had been built by the Turks was dismantled and found to contain the main elements of the little Temple of Nike, which was, in consequence, *reconstructed in the place where it had stood*. Three foreign scholars—Ross, Schaubert, and Hansen—under the patronage of King Otho, contributed largely to the archæological investigation of the Acropolis, which the Greeks were then in process of beginning. Collaboration at this time between Greek archæologists and foreigners was most cordial and close. Nor has it ever declined in cordiality.

A general interest in antiquity resulted, and methods of investigation were slowly forged. Best of all, perhaps, it was soon realised that the most scientific form of record is accurate description aided by close observation. The early records of discovery published about this time in Greece are still of the highest value, as recording the first impressions of the discoverers. Ross can claim a distinction above most of the foreign scholars then in Greece by his deeply interesting

account, in the manner of Pausanias, of the Greek islands, then hardly examined

But the principal credit is due to the Greek authorities for the method in which the ruins of the Acropolis were disengaged True, Turkish and Byzantine buildings had to be destroyed root and branch—but something, after all, had to be sacrificed What emerged was cleared of its encumbrances with the least possible damage to the buildings themselves, and while the work was in progress innumerable fragments of sculpture and inscriptions of the very highest value were detached from the later walls and buildings The Acropolis as it stands to-day is a model of careful and scientific clearance

Meantime, in Italy nothing at all comparable was being done The Roman Forum remained virtually unexcavated until 1898 Except for Pompeii and Herculaneum there was no major site available for clearance or inspection The science of archæology as we know it to day did not develop in Italy, but in Greece The poverty-stricken and ill organised democracy that emerged from the War of Independence in Greece had turned its hand almost at once to things of scientific and cultural interest The early clearance of the Acropolis stirred the imaginations of various scholars throughout Europe to new lines of inquiry A wider study of ancient Greek sculpture was inaugurated which, soon after, in Germany reached the level of a profound critical investigation Greek epigraphy began on scientific lines, and the great Corpus of Greek inscriptions throughout Europe was commenced by the Prussian Academy in 1826, a work of profound scholarship and of incredible advantage to Greek literary and historical studies The Latin Corpus was put in hand in 1863

Prehistoric archæology in Greece itself received its first impetus from the unpretentious work of George Finlay, the historian of the Byzantine empire and of

modern Greece, himself resident in Athens. By a careful circularisation of Greek schoolmasters and others throughout the length and breadth of Greece he accumulated a mass of material and of information which was destined to lay the foundations of a scientific study of the prehistoric periods of the mainland. But not until the time of Heinrich Schliemann did scientific archæology first make its *début*, not only as the study of the remains of antiquity, but also as a method for their discovery. Schliemann, early stirred to a study of the material remains of Greece by a scholarly reading of *Homer*, was among the first to realise that the Homeric poems could not be purely imaginary in so far as they described a state of society. Yet there was nothing found in Greece which could be approximated to the conditions described in *Homer*, and no material with which the poems could be adequately illustrated. Thus from Greek literature there sprang directly the study of Greek archæology on scientific lines, and from it gradually evolved the study of prehistoric times throughout the world, at least in their later and more civilised developments. *Homer* had once again proved an inspiration.

Schliemann at first attacked the problem of the discovery of the chief Homeric sites. Troy had become lost in the ramifications of an ancient controversy of which we get the echoes in *Strabo*, himself a Homeric critic of no mean kind. Mycenæ the Golden, on the other hand, stood known throughout the ages, with at least two great monuments, the Lion Gate and the 'Treasury of Atreus,' still above ground and firmly identified ever since Roman days. But Ithaca was, and still is, as elusive as the Isle of Circe, and of other principal cities mentioned in *Homer* we know still little enough except of Sparta—the Sparta of Helen rather than of *Lycurgus*.

So it was to the shores of the Hellespont that Schliemann first directed his steps. The *Strabonian*

controversy was soon settled, and the site of Hisarlik was unquestionably identified as Troy. His excavations were the first to be carried out on strictly scientific lines. While his methods were relatively defective compared with methods which would be employed to-day, his work was so far in advance of any archaeological excavation previously carried out that he ranks definitely as a pioneer. No excavator had previously paid attention either to stratification or to unconsidered trifles which had no immediately obvious interest. Schliemann not only noted everything and kept most of what he found, but he had drawings and photographs made, both of the excavations in progress and of the objects found each day. Further, the depth of each object was recorded accurately, and from the records he has left it is possible to some extent to reconstruct the stratification of the site.

Unlike most excavators Schliemann was pursued by good luck. No doubt he had a *flair* for knowing where to dig and what part of the site to investigate more closely. Yet nothing but good luck would have preserved for him the great "Treasure of Priam" as it is called, which during the siege and abandonment of the Second City about 1900 B.C., had been hastily stowed in a hole in the city wall. A thousand chances might have revealed it to looters in ancient times, but fortune spared it for Schliemann. Gradually he was able to elucidate the history of Troy, but insufficient collateral information made his task an almost impossible one. Since no other site of the same period had as yet been excavated he was driven to explain what he found by the light of the Homeric texts alone. And they were not adequate to this heavy task. He identified the very ancient second city with the City of Homeric times and failed to discover that the real Homeric city was the sixth. His fault was not due to any ignorance on his part, but simply to

the fact that neither Mycenæ nor Crete had yet laid before him their collateral evidence

In 1876 Schliemann turned his attention to Mycenæ. Again his luck followed him, and the uncovering of the great Shaft-Graves in the citadel was the occasion of the finding of such treasure of gold and silver as the world had never before seen. The discovery aroused world wide interest, and the greatest excitement prevailed throughout Greece itself. The full account of the discoveries, written from day to day, and published in his book on Mycenæ, makes most exciting reading. As at Troy, he went to his Homer and thought that he had found the very graves of Agamemnon and Cassandra. Subsequent research has shown clearly enough that he was wrong, and that the tombs belong to a period at least four hundred years earlier. But the fault was not his. He was guessing in the air, and chronology was no more fixed for Mycenaean times than is the chronology of Ur of the Chaldees definitely known to-day. The discoveries at Ur form a close parallel to those at Mycenæ, both in the sheer weight of precious metal found and in the character of the burials. They are parallel also in that neither Schliemann nor Mr. Woolley could accurately fix the dating at the actual time of the discovery. Both cemeteries were out of relation with other knowledge. Both were *sui generis*. But just as all Schliemann's problems have now been solved and all his errors corrected, so the uncertainties of Mr. Woolley's discoveries will be straightened out as our knowledge of that very young branch of archæology, the Sumerian, increases with further additions and collateral discovery.

Many of Schliemann's mistakes were subsequently corrected by his very able lieutenant Professor Doerpfeld, who later concluded the excavation of Troy. Even so, much has been since discovered about the culture of these periods and a final re-excavation of the parts of Troy still untouched would go far to solve remain

ing difficulties. This is, indeed, one of the principal desiderata of modern archæology.

What Schliemann had begun was admirably continued by Sir Arthur Evans, whose researches at Cnossos in Crete finally gave the centre of the picture of which Troy and Mycenæ were but the background and the foreground. Crete was seen to be the greatest prehistoric culture in the Ægean in prehistoric times, and the Mycænæan world its sequel on the mainland. Troy stood apart as a separate entity, related to the Cretan at times but facing rather eastwards. In the art and architecture of Crete a whole new world was revealed, the study of which depended almost entirely on material objects. Homer hinted at much, but Homer was of a later date than the Cretan hegemony. Mycænæan culture, on the other hand, was now seen to fit into its proper position as the sequel to the Cretan, and at Mycenæ the fullest illustration of Homer was at last found, by no means a complete explanation of the Homeric setting, but at least an explanation of the earlier Homeric elements.

The discoveries at Cnossos rapidly led to the exploration of other Cretan sites. Phæstos, Haghia Triadha, Mochlos, Psira, Palaikastro, Zakro, and many smaller places were found to be other members of the Cretan culture by the explorations of a tireless group of foreign scholars, Italian, American, English, and Greek. Evans had started the ball rolling, and each further discovery helped to elucidate the next. Within a few years of the excavations at Cnossos a big stride forward was made by the discovery of a long forgotten civilisation of immense importance in the hinterland of Asia Minor—the Hittite. The great central city near the modern Turkish village of Boghaz-Kewi, an equally important metropolis at Carchemish in Syria, and slowly other smaller sites, gradually indicated a mighty and self-sufficing power in the Mediterranean background, whose influence

upon Crete, Troy, and Mycenæ was manifest and important. Now, in the last ten years, the exploration of Sumerian sites has added a further stage to the inquiry, and it is clear that both the Hittite and the Cretan cultures owed something to the Sumerian. But much remains to be done, not least the deciphering of the Minoan and the Hittite scripts and the consequent understanding of many documents at present closed to us.

Greece, as I have shown, gave the first impetus to scientific archaeological studies. This impetus in turn led to their proper organisation. Until about 1880 few organised facilities were available for archaeologists in Greece. The magnificent museums of Athens were being slowly built up, and in some universities in Europe there arose a demand for archaeological instruction. Soon there were established in Athens Schools of Archaeology, to which students of the various nations could come. In Athens to-day there are Schools of Archaeology of France, Great Britain, Germany, Austria, Italy and America. The movement spread further, and the various Academies of Art at Rome also began to cater for archaeologists. At the present time new schools are being founded in Constantinople, where there is a German School, and the beginnings of a French and a Russian. The purpose of the majority of these schools is not instruction, but simply to offer facilities for research. Each has its own library and its own organisation, and in Greece each is allowed to carry out official excavations. In Italy, so far, this privilege is not granted, and excavation of Italian sites is allowed only to Italians. That there are enough indigenous archaeologists to excavate all the numerous sites of Italy is improbable enough, but national pride was never generous to the cause of science. In Turkey, on the other hand, foreigners are now given considerable facilities for excavation, and in Mesopotamia, fortunately, the British Mandate makes excavation

easy. A School of Archæology in Mesopotamia is now in process of formation, and there is in existence a similar School in Palestine, which, since the war, has done exceedingly good work. But all the British Schools are hampered, in comparison with those of other countries, by a lack of Government financial support. The Schools at Rome and Athens are given some slight official help, but that in Palestine has been deprived of it. Private subscription is in each case the mainstay of their finances, but private subscription is an inadequate background for continuous study, and affords precarious support for institutions that are of great international value.

The teaching of archæology in the universities is relatively new. There are only four professorships in archæology in England and Scotland (one in the pre-historic branch) and one in Ireland. None of these chairs are more than forty-five years old, and one was founded only two years ago. There are other minor posts for the teaching of the subject, but they are not numerous. The belief is still prevalent in some learned circles that archæology has to do only with "pots and pans," and it is solely due to prejudices of this type that the subject has not advanced in this country as rapidly as it has in Germany or Greece. Fortunately scholars now realise that archæology can contribute widely to literary as well as to artistic study, and that it is daily setting them problems in decipherment and textual knowledge of the greatest importance.

The distinction between the antiquary and the archæologist has already been outlined. There remains the more general distinction between amateur and professional archæological research, and this is admittedly more difficult and more invidious. It might be better described as the difference between authorised work carried out under the auspices of recognised learned bodies and in the main controlled by them, and pri-

vate enterprise privately financed without necessarily any recognised control

The dangers of the latter forms of activity, particularly in the field of excavation, are obvious. Sites may be spoiled, the methods employed may be hasty and unscientific, and the excavations may be carried out in such a way that much is lost or let to pass unobserved. Government measures to prevent such excavations exist in most countries, and, in the main, they are adequate, but archaeological research is not confined to excavations. Misunderstood zeal can produce much in the way of museum research that is relatively valueless, ill-equipped students or amateurs may be responsible for publications that were better unpublished, evidence may be marshalled which cannot bear a careful and scientific scrutiny on the part of trained archaeologists. Many books and articles are thus published by *Privatgelehrte* which reflect but ill upon the studies they pretend to encourage and assist. A resounding title may carry a book a long way into the popularity of a credulous public, particularly if it is written in an avowedly popular style. But in the professions you do not expect, as a general rule, to find a standard work on law produced by a man who has never been either a lawyer or a student of law. Nor do you expect to find the most accurate study or the most up-to-date views in a book on medicine by an author who has studied it only in his spare time as a hobby. So in archaeology, while much has been done by workers who, financially independent, are thus able to devote their whole time to it, there are still many who, considering archaeology as a hobby, claim to have produced standard works. The reading of archaeological works, like the reading of any works of research, can be a profitable pastime to many, but the actual process of research and exploration will always be but inadequately carried out by dilettanti. Archaeology is to-day as much a profession as any other, and

demands a long period of apprenticeship and a close and unremitting course of preliminary study. It can not, any more than Law or Medicine, be indulged in as a pastime with any hope of first rate results emerging. To carry out archæological research adequately requires an equipment and experience which can only be acquired by time and training.

CHAPTER II

APPLICATION AND USES

THE results of archæological research are rarely ends in themselves. They are almost always accumulated for the advantage of other studies. Just as Papyrology hands over its material to the students of literature and philology, and as Epigraphy serves the purposes mainly of history, so Archæology subserves other interests and other pursuits. It is essentially an ancillary study.

Art.—Chief of all the activities that it aids is art, not merely the history of art, but also its production. Newly discovered works of art belonging to periods forgotten or all too little known may have a profound influence on living styles. Just as the *Venus dei Medici* was used by Botticelli as the model for his *Venus*, so, as has been previously noted, the discoveries of Greek pottery at the close of the eighteenth century and the clearance of Pompeii resulted in the formation of an entirely new style in the minor arts and handicrafts of Great Britain in particular, and of most of Europe in general. So, too, Greek and Roman architecture have left a permanent impress on all subsequent architecture, with sudden innovations that corresponded with new discoveries. But architecture is, on the whole, conservative and hesitates to adopt new styles if it can reshuffle its older repertoires. The cruder method of mere copying or imitating a style based on new discoveries, whether in art or in architecture, has less value for the advancement of taste than the employment of new discoveries as guides to new interpretations. Thus, the revelation of the massive beauty of Hittite sculpture or of the delicacy of Greek archaic statuary has served sculptors, not merely

as models to copy and reproduce, but rather as guides in method and as suggestions for fresh creation, in which the new lessons are absorbed and expressed anew. It would thus be hard to conceive what the style of the sculptor Mestrovic would have been had he not admired and studied the sculptures excavated at Delphi. Nor would it be possible to imagine the art of Maillol without its background of early Greek sculpture.

The chief advantages to art of the artistic discoveries of archæology are the lessons in trial and error that can be learnt from seeing how the ancient artist solved or failed to solve the problems that he set before himself. A century ago—when ancient art meant little else than the Apollo Belvedere, the Venus dei Medici, the Venus de Milo, and a not very considerable number of inferior Roman wall paintings and Greek vases which were wrongly called Etruscan—the inspiration of the art student was limited indeed. But now that Greek vase painting is a separate and highly intricate subject of artistic research, and Roman wall painting has been relegated to its proper place and the various statues fitted into an orderly development of art, it is possible for the student to choose from a vast number of examples of all periods. These extend from the fine drawings of Palæolithic cavemen to Minoan frescoes, Egyptian pre-dynastic ornaments and sculptures, and Mycæan or Sumerian gold repoussé work, from them to the fine flower of Greek archaic sculpture and painting, and so to the summit of all Greek art—the sculptures of the Temple of Zeus at Olympia. Yet none of these examples of the fine arts were available sixty years ago, for the simple reason that they still lay beneath the soil. The student can now face his problems from many points of view. He can watch how the Minoan used his eyes and copied Nature in his designs, or how the Greek vase painter used his mental vision instead, how the Hittite sculptor thought

in solid masses and the Egyptian in flat planes, how the Palæolithic painter drew swiftly without hesitation, and how the Byzantine maker of cloisonné enamel hammered out each line with infinite slowness and patience, how the archaic Greek made his statues with hammer and punch, and the late Roman with a running drill as his principle tool, how the third-century Greek carved superb portraits and the fifth-century Greek carved none. All such discoveries and considerations are of infinite use to the student of art, and all are derived from archæological research within our own lifetime.

Canons of Taste—It would be presumptuous to fix upon the works of past ages to serve as canons of the taste to-day so long as any artists remain alive. But all too often this has been done. The Venus de Milo is still, in France, at least, the ideal *par excellence* of feminine beauty to many hundreds of Frenchmen, despite the fact that few Frenchwomen bear any actual resemblance to her! She persists as a canon, and can only be removed from her pedestal by the substitution of clearly superior works. But unfortunately, her pedigree on the occasion of her first appearance was so impressive that, even after it was shown to be patently false, its impressiveness is still operative. The Venus de Milo was, on the occasion of its discovery, thought to be so lovely that there could be no doubt that it was from the hand of Praxiteles himself, although at the time no work of Praxiteles was known or available for comparison. Gallic enthusiasm caused her to be sent direct to Louis Philippe with her Praxitelean label firmly attached. The subsequent discovery of a signed basis, which almost certainly came from the statue, and which was Praxitelean neither in date nor in signature, so fluttered the official doves that the offending evidence was hastily made away with. Even without that evidence, it is now possible to place the statue firmly enough on grounds of style into a period

sufficiently remote from Praxiteles, and to substitute for her either superior figures of Venus, like that of Cyrene (at Rome) found during excavations in 1915, or better periods of art. But old favourites are dislodged with difficulty, and it will be long before it will be possible to demonstrate the superiority of other styles and other statues. At the same time the eclipse of the once admired Apollo Belvedere is now complete, and many an old favourite has receded before the advance of better informed taste.

History—It would require a volume to give a full account of all the additions which archæology has given to the study of history. Even for the best known periods where literary sources are numerous and adequate there is available a great mass of archæological evidence, slowly and steadily acquired over a period of half a century, which fills gaps, adds paragraphs and solves problems, or even corrects prevalent views and necessitates restatement of them. Take as an instance the history of Sparta, previously to 1905 it was thought that the traditional severity and austerity of Spartan life was the result of a long inheritance and of institutions founded early in Spartan history. But the excavation of Sparta, which took place between 1905 and 1912 and has been continued in the last few years, has revealed, to the surprise of many, that Sparta was a luxurious and opulent metropolis in the eighth and seventh centuries, and that the severity of the so-called Lycurgan constitution was a relatively late development, necessitated by the dangers which luxury and opulence brought in their train for a dominant people numerically inferior to the subject races they controlled. In fact, the beginning of the Lycurgan puritanism can hardly be placed earlier than the middle of the sixth century. This, obviously enough, is a contribution to historical studies of the most far reaching importance.* And there are others of equal

* J. Wells *Studies in Herodotus* (1923) p. 39 ff

importance. Such well known ages as those of the Emperors Augustus and Claudius would hardly seem to require archaeological assistance to illuminate them. Yet research along the Roman frontiers, on the one hand, and the accumulation of Roman inscriptions, on the other, has brought about a re-orientation of many views. The history of Roman British times now depends more upon the material evidence than upon the texts of Tacitus and Caesar, which are now seen to be patchy in the extreme. The excavations at Silchester, Wroxeter, Corbridge, Carlisle, Richborough, and along both the Hadrianic and the Antonine walls in the North have added to our knowledge, not only of Roman culture in our islands as a whole, but also to what we knew of military dispositions, commercial development, foreign contacts, and departmental government.

In Italy the earliest stages that were preliminary to the growth to power of Rome are now more clear as a result of the study of Italian origins, and we can now better understand at least a century of development before Rome finally emerged as the controlling Italian power. Etruscan history, on the other hand, remains obstinately silent. This is due, not only to the absence of Etruscan literature and to the inability of philologists to translate Etruscan inscriptions, but also to the fact that the discovery of the bulk of our material for Etruscan archaeology was made at a time when archaeological method was non-existent. Still, the actual origins of Etruscan settlement have now been made far clearer, and we are more certain of the earlier periods of Etruscan history than of the later.

In other spheres whole chapters have been added to history. Until recently the Maya culture of Central America was virtually unknown. Now its outlines for the second, third, and fourth centuries of our era are at least roughly drawn. Early Mexican and Peruvian history have also been illuminated by archaeological

study of extant remains and by excavation, and the antiquity of the New World in historical times is seen to be considerable. Elsewhere a context has been given by excavation and research to peoples who previously were but names, unattached and without context. Scythians, Celts, Sarmatians, Thracians, and Macedonians were, until the last twenty years, but names that flitted through history without background or context. Now, while not wholly explained, they mean more than they did, largely owing to the attachment to them of a body of material evidence. Egypt, perhaps more than any other region, has filled out its history and added new periods to it from the prodigious mass of archæological evidence which the dry soil of the Nile Valley has preserved. For some periods it might even be said that no type of material object is absent in some form or another, and that, in consequence, the whole life of the Egyptians at those periods can be reconstructed.

Religion—It might be thought that for things of the spirit the material discoveries of archæologists were valueless. But, as an archæologist I would venture to suggest that, were Christianity to vanish during the coming millennium, and with it the same proportion of literature as has failed to survive from the Pagan times of Greece and Rome, yet from the ruins of Christian churches and monuments, and from the fragmentary documents surviving, it would be possible to essay a very creditable reconstruction of the Christian religion along archæological lines. The finer points of controversy and dogma would naturally escape the pick and shovel of the excavator, but the main outlines of the creed would be easily recoverable, for no religion in the world except that of the Manichees and the Hebrews has failed to record its most intricate beliefs on stone or in wood, ivory, or metal. Even where no literary record survives, as in Minoan religion, it is possible to establish, not only its deities,

but also its mode of worship, its organisation, and even the purpose of its service. Hittite religion is still more clearly ascertained, for some Hittite records are written in known scripts. Naturally, the spirit and the psychology of any given religion vanish with its passing, but archaeology can reconstruct its outlines, most of its creed, and all of its background of ceremony, dedication, and ritual.

Greatest benefactors of all to archaeologists are the religions that enjoined upon the living the task of burying with their dead a proportion of objects which were to serve them in the other world. Even the unambitious beliefs of Neanderthal Palæolithic man enjoined something of the kind, and not until the supremacy of Christianity did the dead cease to carry with them some equipment for their subsequent life. But, even so, the absence of material equipment is as significant as its presence, for it indicates the view held by the living upon what the future life was to be like. The complete equipment of the dead in the royal graves of Ur of the fourth millennium B.C., where the entire Court of a prince or princess, handmaids, maids-of honour, grooms and horses, royal guard, together with most of the contents of the royal or princely drawing room and dining room and boudoir, were buried with the royal dead, indicates the simple belief that the next life was but a repetition of this. So in the tombs of Scythian kings of the fifth and fourth centuries the immolation of complete stables, with chariots and their fittings and the royal regalia intact, shows a precisely similar view. Nor did the views on the next world change very rapidly. Tutankhamon shows no diminution in optimism or increase of an economic or niggardly spirit, which might have reduced the amount of the tax upon the living, levied by the demands of the dead. But the folly of primitive belief has contributed heavily to the extreme benefit of learning and to the general advancement of culture.

Without it our museums would be half empty and our history books devoid of illustrations

Greeks, with greater economy, replaced the heavy ornaments of pure gold and silver which their ancestors of the seventh and sixth centuries had habitually handed over to the dead by what can only be called deceptive imitations. Gilt terra-cotta, thin gold leaf impressions of more solid original gold coins, and an abundance of tinsel or outwardly splendid gold diadems as thin as paper, preserved the living from financial disaster during the stormier periods of Greek history, and were optimistically thought to deceive, not only the departing dead, but Charon himself. Rationalism helped largely to prevent waste, and compromises of this kind were dear to the heart of the essentially Mediterranean Greek, who rarely gives away something for nothing. A comparative study of the development of grave ritual and of the character of grave-offerings for the dead would go far to illustrating the increase of a rational outlook upon the problems of life and death.

Rome saw the decline of tomb-offerings almost to the minimum, and it was finally brought to an end by Christianity, in whose beliefs there was little place for the fittings of this world, which were considered as a snare and a delusion and, in consequence, a positive hindrance to life in the other world. Thus, where trinkets and necklaces ranked as millstones, it was hardly likely that much would be buried with the dead. The only survival to-day of anything at all corresponding to a tomb deposit is the custom, still with us, of placing foundation deposits beneath buildings. There is little doubt that here still lurks some hint of the old Pagan custom.

Literature—Archæology is the handmaid of literature, and cannot, in consequence, contribute towards its growth in any but the most humble ways. But it can do something. The language of Homer has re-

ceived much assistance from recent discoveries in Hittite, Babylonian and Greek Epigraphy, all of which are the outcome of archæological inquiry. In other spheres complete series of records have been added to history and to literature, as in the case of the Tel-el Amarna diplomatic correspondence between Amenhotep III and Amenhotep IV of the Eighteenth Egyptian Dynasty, and the Kings of Mitanni, Assyria, and Babylon, or the Cappadocian tablets, written in early Semitic, which have illustrated the language and commercial organisation of the Semitic predecessors of the Hittites in Hittite lands. The tablets of Boghaz-Kewi have, in turn, told us much of the literary capacities of the Hittites in the height of their power.

The study of Greek dialects depends almost entirely, in the first instance, upon inscriptions, while Latin dialects, like Oscan, can be studied only from similar sources. On rare occasions textual difficulties of well known authors of Greece and Rome can be corrected or elucidated from epigraphical sources or from other archæological evidence. A diverting instance occurs in a passage of Aristotle's *Ethics*. Unknown words are not infrequently understood by the discovery of other records which explain them. Commentaries like the recent editions by Sir James Frazer of Apollodorus and of Ovid's *Fasti* depend, in the last resort, upon much that is archæological, and the famous edition of Pausanias by the same scholar showed how profound and methodical was his use of archæological sources.

CHAPTER III

WORKING METHODS

THE history of archæology has been the history of a development from the unscientific method to the scientific. Just as the astrologer preceded the astronomer, and the alchemist the chemist, so the antiquary of the old style and the curio-hunter has preceded the archæologist. But it would still be rash to attempt to place archæology on the same footing as the natural sciences. Archæology has primarily to do with the activities of man, and they, all too patently, are not subject to immutable laws, but rather to probabilities. In nine cases out of ten men will always act in the same way in the same circumstances, but it is the tenth case that counts. Scientific method can never count upon human activities always reacting to the same stimuli except in so far as they are subconscious or not subject to the control of will and character, which themselves must always be diverse. But the unconscious reactions of the human mind, in so far as they occur in archæological discoveries, are a proper subject for scientific examination. So also is the natural setting of human objects and the automatic accumulation of deposits in any place where man has settled.

Excavation—To Schliemann must be given the credit for establishing the outlines of method in excavation. As we have already seen, he was the first to insist upon the retention, during the course of digging, of all objects found, or of at least a representative selection of the minor and apparently unimportant trifles. So, too, he fixed, roughly enough, the system by which the different strata of deposit can be distin-

guished But to-day many excavations are still carried out on systems which are haphazard and by obsolete methods

No two ancient sites are exactly similar in nature Earth accumulates over an abandoned place in different ways Sometimes it is by the slow growth of vegetation, grass, leaves, or shrubs Sometimes it is by alluvial deposit, sudden and repeated spate of streams and rivers, sometimes by the fall of rocks and stones from surrounding heights Sardis, in Asia Minor, the ancient capital of Lydia, was silted up rapidly by river sand brought by flood Delphi was largely encumbered by rocks and earth from the overhanging cliff, which accumulated by repeated earthquakes and continual frost The Acropolis of Athens, on the other hand, kept its fragmentary treasures below ground solely through human agency, by the repeated terracing up of slopes and by the consequent use and re-use of earlier remains as filling at later periods, and by the gradual breaking up of older buildings, partly by decay and partly through the agency of the devastations of war and their use as rubble for new builders Mounds of the Bronze Age and Stone Age in various parts of Europe and Asia, that stand often to the height of forty or fifty feet, are built up slowly and steadily by the repeated collapse of mud brick houses and by the retention upon a lived-on area of all the rubbish of living people and households The process can still be seen in operation to-day in any Balkan village or Asiatic hamlet, where fires, warfare, and occasional abandonment raise the level of each newly constructed village by a foot or so Many villages in these regions stand on eminences which are simply the relics of earlier dwellings, levelled and rebuilt on time and time again

Great fires in the same way serve to raise the level of cities Many parts of Constantinople and the greater portion of Salonika have risen appreciably in height

as a result of great devastations by burning during the last fifteen years. For in less sophisticated communities the rebuilding of a city after a disaster is rarely accompanied by the costly process of clearance of ruins. Burnt houses are simply pulled down and the bulk of the rubbish derived from them levelled down to make a new floor. The Forum at Rome was buried to a depth of some twenty or thirty feet by the various agencies of fire, demolition, the cartage of rubbish and growth of vegetation. It may be taken as more or less axiomatic that where human agencies have been at work the rate of deposit is largest, and that—except in the case of unusual flood—where natural agencies have been at work the rate is slower and the deposit slighter. In England, as in all damp climates, the rate of vegetal decay is greater, and Roman sites not reoccupied after the Roman period may be covered with several feet of heavy earth. But the contrast of rates between natural and human agencies is clearly seen at any Greek prehistoric or Romano-British site, where against the two or three feet of upper natural deposit can be set the subsequent deep layers due to human agency. These, as I have said, reach often to fifty feet in a Greek site for a period no longer than that which Nature required to deposit the thin natural layer upon the surface.

It will be clear from these considerations that the excavator, when he commences to open an ancient site, must uncover the strata in the order in which they were deposited. Above all, he must remember that, just as they were always deposited horizontally, owing to the action of gravity, so they must be uncovered horizontally. Yet many excavators even to-day are prepared to cut into sites from the side, 'against the grain,' as it were, and so to work through all the strata from the side at right angles to the line of deposit instead of parallel to it. The one and only method of attack, then, must be by commencing upon

the highest surface at the top of the latest stratum and uncovering the strata layer by layer until virgin soil is reached. The process can be best described as the lifting off of a pile of carpets, each of which has another beneath it, whereas to dig into the side of a site would be equivalent to burrowing into the edges of the pile of carpets. The information as to the quality and nature of the carpets, which would be obtained by so burrowing, is about as valuable as that obtained for the history of a site by cutting into its side!

So, too, the sinking of pits from the top of a site is a sketchy and insufficient method, suitable only in the preliminary trials which precede an elaborate investigation. In any case, no chronology can be established by such methods. The only reliable method is to open up a wide area, not merely a trench, and to maintain the same width, as far as circumstances permit, from start to finish.

The most delicate operation in a stratified site is the distinguishing of strata. No two strata are likely to be the same depth, and one can be distinguished from the other only by a change in the colours of the earth or by a change in the character of the objects found. The excavation of each stratum must therefore be carried out slowly, and every object of human manufacture, and all intrusive natural objects as well, must be carefully noted and classified in order that the change shall be recognised when at last it comes. So the history of the site slowly reveals itself. The unexpected is always awaiting you because archaeology, as I have said before, deals with human and not natural factors. A sudden black layer may indicate a destruction by fire, a thick deposit of stones or clay may indicate a demolition of houses or the collapse of buildings. The strata below and above such deposits may be different or they may be the same, according to the decision of the inhabitants of the time to stay on the

site after the conflagration or collapse, or to depart and leave it to others. Sometimes you will encounter a stratum that is completely sterile. This can only indicate a temporary abandonment of the site. The whole time unremitting observation and accurate watching are essential. No competent excavator should leave his site for a single moment as long as the workmen are still digging.

The employment of workmen who are professionally used to the pick and shovel is an essential part of a properly conducted excavation. Amateur diggers are worse than useless. For digging is a highly technical accomplishment, as anyone can see who watches for a short time the workmen engaged in the digging of drains. Amateur workmen spend twice as long as the professional, and usually get twice as exhausted in the process. I have always been impressed by the steady, continuous work of men accustomed to digging whether they are agricultural labourers or builders excavators. The amateur knows what he is after and is anxious always to find *things*; the professional is there merely to dig under control and instruction, and his long training usually gives him a better eye for the discovery of small objects in the soil than the amateur, who is working always with anxiety and under some excitement. The greatest need of all is always for slow and steady work that proceeds at the same pace, not for sudden bouts of furious and exhausting digging. When anything at all sensational emerges, then it is the task of the archæologist in charge to slow down the process of clearance to a mere scraping and, if the objects found are delicate, to do the clearance of them himself. Above all, nothing that has begun to emerge from the soil should ever be pulled out. It must be cleared all round in order that the circumstances of its deposit there be established. It may be in contact with other things, it may be fragile in itself, it may be

in the detective story—it must be left undisturbed until every clue that is near it has been examined.

The importance of establishing stratification with the utmost accuracy is obvious, but the results of its establishment are not always so clearly understood. The first sequel to the fixing of strata is that the relative position in depth of the objects found in the strata gives their relative position in time. It will, in consequence, be possible to trace the gradual development of types from early to late according to their position. The prototypes, clearly, will occur at the lower levels, the developed versions in the upper and later levels. Now, this obvious conclusion is one which has not definitely been used as a criterion until recent years, simply because a scientific method of this kind is not always applied, even where its use would be easy and obvious. Before Schliemann's time haphazard methods often resulted in the complete loss of any fixing of types on this sound basis of indisputable fact. Even after Schliemann archaeologists are to be found who will still prefer a typology which is established by *a priori* methods. This has been done rather by those who work in museums and never leave them than by those who carry out strictly scientific field research.

The evidence of a stratification is almost as certain as scientific evidence of any kind; the occurrence of objects deposited in order of time is almost as precise as the occurrence of fossils in the rocks of various periods, with the reservation that there is always the possibility of freak types or of "sports" in anything in which the human factor is involved. But in general, stratigraphical evidence can be taken as nearly reliable as evidence can be.

The trouble with theoretical typologies is that you can never know which is the beginning and which the end. A museum series of bronze ornaments, for example, in supposed order of development from simple to complex and from complex to decadent may

be reversed. What you take for primitive may be decadent, and the supposedly decadent may be primitive. The same difficulty arises when you attempt to trace the influence of one region upon another. It is not always possible to know for certain the direction of the influence. It is often impossible to say whether the influence is *coming* or *going*. So in the case of architecture the primitive and the decadent are hard to disentangle if you have no external criterion. An example occurs in the case of the great "bee-hive" tombs of Mycenæ. According to one view, the manner of their building reached the Mycenæans in its perfected state, and in subsequent generations gradually degenerated in quality. According to the rival view, what are thought to be degenerate types are merely primitive, and the perfect examples of this style of building come at the end of the series. Problems such as this can only be decided by external evidence of a completely satisfactory kind that convinces. Otherwise the mere theories are of the type that "carry no conviction and admit of no refutation."

Sites still occupied are of great difficulty to the excavator. Your modern stratum will be deep and uninteresting, if not actually unpleasant. Damage will have been done to the site and to its stratification. The value of objects found will be more of intrinsic than external value. But one rule must always be observed. The presence of the human factor in all the deposits left by human habitation makes it rash always to depend upon the evidence of one isolated object. You may have established your strata to perfection. All may be tabulated out in order of time and of development, and then one single potsherd or one trivial object that normally occurs in, let us say, Stratum C will be found in Stratum F. Many archaeologists will treat this as one would treat the same occurrence in strictly scientific inquiry—namely, as the single instance that brings the induction toppling

to the ground. If I make the scientific thesis that "all leopards have spotted skins," the discovery of a striped leopard will ruin it. But, as I have said, archaeology deals with the artefacts of man, and man, in his perverse ingenuity, may at times unexpectedly produce once, and once only, a thing that he does not produce again for hundreds of years. So that in archaeology single objects must be weighed long in the balance before they are given the weight necessary to upset a conclusion that depends on a multitude of facts. In some cases, as in that of coins or wholly distinct objects that were certainly only produced at one particular time and bear their credentials clearly inscribed upon them, their evidential value is overwhelming provided they were found under conditions that admitted of no doubt. But ornaments or the designs of pottery are unsafe guides in a case of this kind. Several instances can nearly always upset a conclusion in archaeology, one very rarely.

One must guard, also, in excavated strata against the intrusion of objects of one date into the strata of another. This may happen with small objects by the medium of infiltration by water and the erosion of holes or fissures or by way of the small holes burrowed by beetles, mice, or snakes. Heavy metal objects of small size have a disconcerting habit of appearing at the most undesirable times. I once found a British button at a most respectable depth in a Hellenistic deposit.

Tombs and graves open out for the archaeologist a completely different series of considerations. Here there will be no stratification, no regular deposit in order of time. A tomb or a grave is made at one fixed time, perhaps re-used or opened or robbed at a later date, but it holds no chronology of its own except by the aid of external contacts. That is why it is often so extremely difficult to date burials. Nevertheless, tombs and graves are by far the most productive in

objects of any branch of archaeology. The supreme examples of tombs that have yielded to the excavator not only their wealth but a whole history of the times of their makers are the tombs of Mycenæ, those of Ur, and the great burial of Tutankhamon.

In tombs, as in stratified sites, what the archaeologist has always to look for is the *contacts* with other races, other regions, and other influences. An Egyptian object in an otherwise undatable Minoan tomb will give you, perhaps, the very decade when that tomb was made. Roman "Samian" potsherds in an otherwise unidentified British site will prove beyond dispute that the inhabitants were in touch with Roman culture of a fixed date.

Museum Research — The primary purpose of modern archaeological museums is not the exhibition of curiosities or the display of marvels, but the orderly arrangement of objects acquired by excavation, purchase, or donation, so as to allow research workers to make a comparative study of the material remains of past ages. Many curators, particularly in the smaller provincial museums, tend to forget that this is the main purpose of their collections, but in the larger collections it is clearly evident. Only by a ceaseless and unremitting study of what has already been found is it possible to know what to look for and what to expect in the course of excavation. No excavation is without its surprises and its unsolved problems, but these become less in number and the problems diminish in acuteness if, before the excavations have begun and after they are concluded, a close study is made of what the museums have to teach. In the exhibition of specimens, excavational evidence, as well as the less reliable typological classifications, should always be given their full value.

Most of our principal museums and most museums in Europe and America afford the fullest facilities for students to handle and examine objects, provided

the students are duly authorised and known to be *working under proper control*

Evidence—I have given some indication of the kind of evidence to be obtained from methodical excavation. It has its defects and its dangers, and, as I pointed out, cannot possess the complete certainty on all occasions of purely scientific evidence. But in stating a case or propounding an archaeological theory archaeologists often fail to observe that scrupulous care which should always be employed in any given statement of evidence. A simple rule can be followed. No evidence should be admitted in the propounding of a theory which would be inadmissible in a court of law. Legal evidence has been fixed as the clear statement by a person of what he or she saw or did or heard from the lips of the party whose case is at issue. Second hand statements are not evidence, and what the witness heard said by someone other than the opposing party is irrelevant or inadmissible, for it is simply hearsay. Now the evidential crux comes in archaeology most pertinently when an archaeologist is attempting to propound a theory which depends upon evidence which he did not find out for himself at first hand. From the result of many excavations by different people an archaeologist may wish to make a synthesis, from which a new conclusion emerges. The evidence that he uses may be derived from sources some of which are trustworthy, some of which are not. He must therefore strive to get what amount to *affidavits* from his other sources or collaborators. That is why

will have no more value for the making of a synthesis than the random "hearsay" evidence of the bad witness

Authentic statements of fact, then, are of vital necessity in every excavation and in every kind of archæological research, because upon them must be based the final verdict

Surface Exploration—Excavation is an expensive luxury. It is not often possible for it to be either financed or organised. But surface exploration can prepare the way for it or actually carry out work which may be in every way as valuable. The value of a general survey has been evident from the time when the "itineraries" of the Roman Empire were compiled and Domesday Book was written. Most well organised countries now have something in the nature of an Archæological Survey, the purpose of which is to record, and if possible to protect, every antiquity still extant.

Surface archæological research can be carried out in a variety of ways. Sites can be recorded on the map, and then, at a later stage, identified. Close examination can be made of every antiquity or supposed antiquity that is visible on the surface and final judgment can be reserved for future study, for it is clear that the actual work of research cannot be carried out to its completion on the spot. Scholars like Cyriac of Ancona or Pierre Gylles were the pioneers of surface exploration. Their carefully compiled notebooks are the precursors of the Ordnance map and the Regional Report.

The proper survey for archæological purposes must be carried out methodically and by adequately equipped persons. Where accurate and large scale maps occur, their task will naturally be easier than in cases where existing maps are inadequate or unreliable, or where maps do not exist at all. It is surprising how many regions of the Near East, which of all parts

is the most important for archæological research, are entirely without maps fit to use for these purposes

To the making of maps in general and to the recording of antiquities in particular aerial photography has come as an enormous advantage. While strict cartographical accuracy is hardly to be expected from mere tracings of "mosaic" aerial photographs—that is, regions photographed upon a succession of plates, the prints of which are then combined into one large photographic version—yet the detection of ancient sites and other vestiges of antiquity is often possible *from the air*, when they might have escaped detection by ground surveyors. Discolourations of the soil, often invisible at the ground level, are made evident by inspection from the air, especially from a vertical view, and much has been done in this way to identify forgotten sites. A complete Romano-British town has in the last two years been thus detected near Caistor, in Norfolk, and many new sites in the Near East have been added to the map by air survey, particularly in Mesopotamia. In England a careful survey of certain regions from aeroplanes has added to our knowledge numerous minor sites, and has helped to clear up many problems that hitherto remained unsolved concerning some of the well known and major sites. A curious pendant to Stonehenge has been detected near Amesbury in the shape of a circle, the architecture of which was originally made of wood. It has, in consequence, been rather barbarously termed Woodhenge. The circle of wooden uprights was detected by shadows and discolourations in the soil not easily visible on the ground, and subsequent excavations showed these to be the socket-holes of the wooden uprights.

But it must be realised that in every case aerial survey is engaged on the preliminaries, it may give certainty in the spotting of a hitherto unknown site, but it only gives probabilities in the details. Once

spotted, the site must be examined on the ground and ultimately excavated before any conclusions as to its date and detailed character can be accepted as strictly reliable evidence. In matters of date, aerial survey can but guess, and what appears as a Roman fort may equally well turn out to be Arabic or Hellenistic, at least in Near Eastern regions. In England, many of the circular camps, usually known as British, must remain without a date until excavation has revealed their contents.

Aerial survey has come to the assistance of archaeology as one of its most valuable, if one of its most expensive, allies. It can serve to discover much that otherwise might have to be searched for by repeated travel and much laborious surface research. Until a more aerial age has dawned, however, the regions that are most in need of exploration will still have to remain unexamined except by the occasional and hardy pedestrian. Places like Armenia and the Caucasus, Seistan, and Central Asia still hide secrets, the importance of which far transcend that of the smaller problems that still vex the archaeology of Great Britain and the more civilised West. Expeditions like those of Sir Aurel Stein and Dr Von Lecoq, profitable as they have proved, are at present our only means of learning about some of these closed regions.

The identification of a site which has been found in the course of a surface exploration from the air is a matter of some complexity, for sites rarely spring to the eye, unless they are of the type of the fifty foot high prehistoric mounds to which I have previously referred in another context. Towns and villages which were not in occupation for very long are often almost level with the ground. Ploughing and denudation may have reduced their height, and alluvial deposit may have rounded off their contours. What is in reality an ancient settlement may, in some cases, look like a natural eminence. All walls and foundations will have

vanished, and all obvious evidence of the presence of man will have gone. Bramble and high grass may wave over the whole site, or, still worse, "where Troy was is now the growing corn." But man is prodigal indeed in the traces that he leaves. However fleeting his residence, he contrives to leave behind him a surprising number of relics of his stay. Search among the roots of the waving corn of ancient Troy, or in the neighbourhood of any excrescence upon the surface of the earth that may fill you with suspicion, will inevitably reveal the humble potsherd, the chipped flint, the stray coin and the lost knick-knack, each of which may contain a sufficiently implicit chronology to convey some idea of the date and origin of the site. No traveller with a taste for archaeology should visit what he thinks to be an ancient site without keeping what few relics he can find upon the surface. Even if they convey nothing to him, there are some who may understand them.

In all stages of archaeological research, whether on or beneath the surface, photography is the most essential servant of the archaeologist. Frequently it may be necessary to destroy the remains of a later age before proceeding to disengage the earlier. Photography here must step in to preserve the only record of what is removed. Economies may be practised in various directions, but the one thing in which the archaeologist must be prodigal is in the use of plates. I have no space here to go into the question of the type of camera and the sort of plates or films which should be used, but I can say with certainty that only the best must be employed and that too many photographs can never be taken. The cinematograph camera can now be added to the equipment of the archaeologist, for films so taken serve other purposes than the mere adornment of a lecture, they comprise a large number of separate photographs of the subject filmed from which enlargements may be made at

leisure In a good film you have a choice of many views of one object, while with an ordinary camera you may be risking all your eggs in one basket Colour photography, also, and even colour cinematograph films, are now available to assist the archæologist in making as complete a record as possible of what he has found

Drawing and water-colour painting are as essential as photography The camera is sometimes inadequate, and, contrary to what we are usually told, it is on occasion the most consummate liar, but the clear eye and the steady hand of a good draughtsman can never be surpassed Nor should too much reliance be placed upon mechanical methods of drawing Pantographs and other contrivances all too often miss the essence of an object so depicted, just as a mechanical copy of a statue is devoid of the natural bloom which only the hand of man can give Draughtsmen who are also artists are alone of service to the archæologist for, in making a drawing of an object which has itself come from the hand of man, they are more able to understand its artistic qualities than draughtsmen who cannot draw without the aid of mechanisms

CHAPTER IV

SPECIAL BRANCHES

THE archæologist must be the student of what is found by himself as well as what is found by others. No one can claim to be an archæologist in the fullest sense unless he knows not only the objects themselves, but also the different ways in which they have come down to us from ancient times. On the other hand, the archæologist whose sole task is to produce the goods and then leave them for others to interpret, is hardly an archæologist at all—he is merely a hired sleuth.

As a result of the accumulation of the remains of past ages, research workers have specialised in various branches of archæological study. Some of these studies, like Epigraphy and Papyrology, have become highly developed and largely independent studies. I will consider some of the special branches separately.

Numismatics—The study of coinage and of the separate issues of medals which have been made by known states and cities is not wholly dependent upon archæological discovery. But, if it is not wholly dependent upon it, it is often contributory to it. Since coins are works of art, or at least of artistic ingenuity even at the lowest level, much information can be added to the artistic history of a people by a study of its coins. In coins, also, there is almost always some historical information or some allusion, political or religious. They therefore contain much and varied information. From the purely artistic point of view, as well, they mirror in a microcosm the prevailing artistic tendencies of their day, and, since they can often be arranged in a chronological order that depends upon evidence other than that of their style,

they can be used to contribute to the study of style itself in art. As evidence for the illustration of contemporary life at the period of their issue, they are of inestimable value. Cults, notable events, traditions, social and political changes, and artistic achievements are faithfully recorded in their inscriptions and on their designs and the types that they bear. The standards of weight to which they conform serve also to illustrate political and commercial groupings of states and cities. But the uses of numismatics are so manifold and the information which is provided by a study of coinage is so vast and fertile that it would be idle to do more than hint at it.

Sculpture and the Fine Arts—Greece, Etruria, and Rome, the Hittite and Egyptian empires, Sumeria, Assyria, and Babylonia, the Maya and Aztec cultures have added to our knowledge of the history of the fine arts more in the last fifty years than in the preceding five hundred. The critical study of sculpture, of metal work, of vase painting, and, in a less degree, of mosaic and panel or wall painting have resulted from an examination of the material accumulated. It is now possible to assign sculptures with tolerable certainty at the worst, and with exactitude at the best, to fixed periods and to masters known by name or anonymous. The same can be done in vase painting thanks to a particularly close and accurate study of this special branch which has developed in recent years.* With other branches of painting or fine metal work the same accuracy and precision is not possible, chiefly since the amount of material available is not so large.

In the critical study of Greek sculpture there is naturally a deeper interest than in the study of the

* The pioneers in this work are Prof. J. D. Beazley, the late Mr. J. C. Hoppin, Dr. Langlotz, and Prof. Buschor. Their works on vase painting should be consulted by students studying this branch.

sculptures of other lands and of other periods, since in Greek sculpture we have the finest flower of all Greek art, and there is an abundance of material. The methods used to establish the date or mastership of a given piece are various, and there is as yet no unanimity in what is the best procedure to adopt. In the main, personal judgments of style are more common than objective proofs of date and manner. In some instances the place of origin, the attached inscription and the technique and style, all make an attribution certain beyond cavil or dispute, but there remains a vast mass of sculpture to which is usually applied the *ex hypothesi* tests of an expert. The expert, unfortunately, is fallible unless he can adduce proof of the most cogent and convincing objective kind, and consequently there remains in the study of Greek sculpture room for ample, and all too often superfluous, conjecture.

Nor can sculpture be judged by the same standards as painting. It is a different art, in which the eye and the hand are used in a wholly different way. In sculpture the artist's vision remains steady over a long period of time, in drawing and painting he works swiftly at the command of a transient emotion. You cannot, then, isolate in statues the same elements that you isolate in painting in order to establish the style of one particular artist. The style of Praxiteles may be hard to reconstruct, but you will not recover it by a measuring of noses or a counting of hairs on the head. For the swift hand of the painter clings the more easily to conventions and to little habits and foibles because of its very swiftness. The quick draughtsman tends in his speed to resort to graphic "shorthand," and it is in the private "shorthand" that we detect the personality of the artist. The methods of Morelli laid a sound basis for all critical study of painting. In sculpture there is no "shorthand" because the artist moves slowly, sometimes at a snail's pace, and the need itself

for abbreviation in design is not evident. Consequently, in the fixing of master hands and in the attribution of unsponsored statues other methods must be employed. Unfortunately no scholar has yet come forward with a method, and we are left with the application of technical considerations on the one hand and with judgments based on a consideration of style on the other. Of these two the former is the more satisfactory.

Even more hazardous in the study of Greek sculpture is the reconstruction of the style of a master from whose hand no original survives, based upon the evidence of a series of copies made from lost originals. Here Platonic "opinion" is despotic indeed, and "shadows of shadows" are the material! It is, indeed, a flowery pasture for amateurs. But a critical eye and a cool brain can achieve something. The more fertile study of Greek sculpture is found in the archaic period when technical methods were high and production was slow and careful. Our knowledge of it is considerable, since we have for the archaic period nothing that is not original work. And our wealth of first hand material continues until the early part of the fifth century B.C. But for the men who ranked as the most famous sculptors of the fifth, fourth, and third centuries we have a pathetically small supply of first hand information. Nothing survives certainly and directly from the hand of Myron, Pythagoras, Kalamis, Pheidias, Polycleitus or Cephisodotus (to mention a few names only), nor are the originals attributed to the hands of Praxiteles and Lysippos universally accepted as such.

With Roman and Etruscan sculpture we are in an even worse plight, but the bulk of material is there to instruct and to inspire, and the work that can be done upon it is endless. The study of Greek sculpture is backward in comparison with what has been accomplished in other branches of archæological research,

although the amount of literature published upon it probably exceeds in bulk that compiled on any other branch of ancient art

Prehistory—In extent the study of the prehistoric periods is prodigious. It is in consequence sub-divided into many branches. The Palæolithic Period, with its high artistic and anthropological interest, absorbs much activity, and the Neolithic and Bronze Ages attract a widely different group of scholars, but for all the prehistoric periods from the Eolithic to the Iron Age excavation is the principal guide and almost the only producer of reliable material. Under the Bronze Age there have to be included most of the great cultures that preceded the first millenium before our era, as well as the cruder struggles of semi barbaric folk on the outskirts of Europe and in other continents. Prehistoric antiquities are therefore classified into groups, at least in the European and Asiatic spheres. Ægean, Italian, Central European, South Russian, Caucasian and Anatolian are some of the temporary expedients for the organisation of prehistory, and these groups are in turn sub-divided. Mesopotamia and India form two recent non European groups.

In each group the study of ceramic is of supreme importance, if only for its chronological value. In each the value of evidence must always be most rigidly considered and most carefully examined. With prehistoric objects more than any other the absence of context renders the object almost valueless, assuming that it is devoid of artistic style or character. Stone axes, bronze weapons, or simple pots may have a certain interest or beauty of their own, but without connotation they lose most of their importance. A prehistoric artefact shorn of its context becomes a mere object, but if its place of finding is known its evidential value increases as its interest grows. If the depth at which it was found and the objects associated with it are recorded, it at once takes its place as a *docu*

ment in the fullest sense of that term. That is why the antiquarian who in the past merely collected or noted inadequately can now contribute little to the steady growth of the scientific study of prehistoric times. The first solid attempt to classify, to collect all available data, and to draw cautious conclusions from evidence made in the study of the prehistoric periods of the British Isles was the publication by Sir John Evans of two epoch making works upon the stone and bronze weapons and implements of Great Britain and Ireland *. In these works he accumulated from all sources the evidence that had so far been made available, and in doing so he constructed a valuable synthesis of the scattered records and stray accounts left by several generations of antiquarians. These two important works still remain in some sense textbooks, and constitute a solid archæological piece of research.

From solid work such as this, which at once promotes a further step forward in the study of regional archæology, there almost always emerges some new knowledge which is the stepping stone to further discovery. Recent inquiry into the Early Iron Age of Europe has in this way led to the identification of remains in Britain which can be equated with European Iron Age periods. The evidence used has in part lain unidentified in museums, and the new additions to knowledge have made it possible now to give a date and setting to what hitherto had remained unfixed. A similar instance may be found in the light thrown upon Mesopotamian archæology by the discoveries on prehistoric sites in India. Among the mass of objects excavated at Mohenjodaro and Harappa in Sind were certain cylinder seals inscribed with unknown characters. Similar seals have now been identified in the re-

* *The Ancient Stone Implements, Weapons and Ornaments of Great Britain* 1872 (2nd ed. 1897) and *The Ancient Bronze Implements, Weapons and Ornaments of Great Britain and Ireland* 1881.

mainly from Mesopotamian sites, among which they had been recognised as intrusive and left unclassified. In the same way a fine Cretan bronze statuette had for many years been relegated to the cupboards of the British Museum and labelled "suspect" until the discoveries in Minoan art made it possible to identify it without hesitation as genuine Minoan. Recent work on Central European antiquities in the region of Transylvania has at last enabled archaeologists to isolate specific Transylvanian types of gold work, many of which had hitherto been given but the vaguest classification.

This process of gradual building up of stepping stones for further advance is, after all, the main method of prehistoric studies, and, as such, it is a strictly scientific method. In fact, scientific methods are more applicable to the early prehistoric periods of archaeology than to the historic or to the later prehistoric, since man, with increased sophistication, behaves with less ordered regularity in his modes of making and acting, and the inferences to be drawn from his material remains are, in consequence, less reliable and more frequently upset by the contrary instance. As the human mind grows in ingenuity so it advances in eccentricity. Tradition fails as invention grows, and it is precisely upon the endurance of traditional styles and methods that many of the premises of archaeological arguments are based.

The prehistoric periods are to many the most attractive because they may open the widest fields of speculation. Nor are they encumbered by too vast a mass of philological or literary adjuncts. As a result they attract some who see a greater ease of accomplishment and a greater possibility of achievement, but, in so far as they do this, they are delusive, for in no branch of archaeology is there greater need for precision and accuracy or for controlled speculation. No student is likely to produce first-class work in prehistoric

periods who has not first passed through the rigours of the historic. Nor can a simple enthusiasm for the unrecorded past replace the advantages which a study of literature and language gives to those who examine the recorded. Classical scholarship is as necessary an equipment for the research of any period of Greek and Roman archæology as the knowledge of hieroglyphic and cuneiform for Mesopotamian and Egyptian. To discover things which you cannot interpret is a result of mere ignorance rather than a disappointment provocative of sympathy. The study of pre history is a vast and sometimes unwieldy pursuit, nor is it possible here to give more than the briefest outlines of it. But in results it has been, in the last fifty years, by far the most productive of all studies and the most contributory to the knowledge of the evolution of man and the culture that he develops.

Egyptology —The study of the remains and antiquities of Egypt form a separate branch, mainly for the obvious reason that they cannot be amalgamated easily with other branches of research. Egypt was a coherent entity and a self supporting state in a very remote antiquity, and her history has been continuous. When the rest of the known world was passing through what we term 'the prehistoric periods,' Egypt maintained a steady culture, and when most of Europe and Asia, with the exception of Sumeria and Crete, were relatively barbarous, Egypt was tolerably civilised. To place early Egyptian archæology, then, among the prehistoric periods would be to classify it wrongly. Hence the term "*Egyptology*." As our knowledge increases it will be equally necessary to segregate the studies of "*Sumerology*," "*Hittitology*," and "*Minology*," though fortunately these cumbrous terms are hardly likely to be employed. Although the literature of Egypt is negligible in quality, there is enough of it, and the study of hieroglyphics is both learned and important. The process by which the decipherment of

hieroglyphs was accomplished, first by Thomas Young and later by Jean Champollion, between 1814 and 1832, is a chapter in archæological history of the liveliest interest. As a study in how to decipher unknown scripts, the accounts left by Young and Champollion of their methods will remain a classic.

Egypt with its drifting sands and its intensely dry atmosphere has left to the excavator the most complete record of its daily life that can be found in any country. The exceptional sites of Pompeii and Herculaneum alone provide rival instances. The knowledge we have, then, of Egyptian life is for some periods complete. As a preliminary training in how to use material, Egyptology should naturally provide the finest imaginable school, and any archæologist who has this advantage is indeed fortunate.

Papyrology and Epigraphy — These two highly specialised studies are the outcome of archæological research and dependent on it, but each has developed into a learned study, contributory in the main to literary and recorded history rather than to artistic or scientific knowledge.

Papyri, which were in antiquity mainly kept in rolls, have been found, as such, complete and intact only among the ashes of Pompeii. But even so they were entirely carbonised, and the complicated process of their unrolling has not resulted in their satisfactory decipherment. The only other occurrence of papyri or similar material has been in the rubbish heaps of Egypt and Central Asia, where the absence of humidity in the soil has preserved large and important fragments. From these fragments much has been learnt of lost literary, historical, and scientific works, but the knowledge is in any case only fragmentary, as are the papyri. But for a study of contemporary script and calligraphy, of phonetics and philology, papyri have provided ample material.

Epigraphy is concerned only with writing inscribed

on more durable material, which can survive the vicissitudes of climate. Inscriptions on stone, bronze, and occasionally wood, and the writing drawn, painted, or scratched on pottery or brick, come under the category of epigraphical study. Upon the basis of epigraphical research has been largely built up the classification of dialects of Greek and Latin, the study of cuneiform, and what small knowledge we may possess of obscure tongues, such as Iberian, Gaulish, Celtic, and Lydian, to mention only a few. The processes of epigraphy are numerous, but the principal is the establishment of a comparative study of alphabets and syllabaries. The growth and evolution of letters once fixed, there is available a chronological test for the date of any given inscription whose letters belong to such known groups. Epigraphy can thus serve as an independent means of dating architectural or archæological contexts. But there is always the risk that late inscriptions may be cut on early buildings or that old inscriptions may be incorporated in later buildings. It is in such cases as these that the archæologist and the epigraphist must collaborate with caution and circumspection.

Detection of Forgeries — The continuous and steady research always being carried out by the staffs of large museums contributes as largely to archæological knowledge as any other source. Comparative study by itself, in science as in art and archæology, leads always to valuable results, but museums base their comparative studies also upon the knowledge given to them by excavations.

Since many illicit excavations are always in process of being carried out, and since the products habitually reach the market, there is always a steady flow into museums and private collections of antiquities of great value and importance which are, in almost every case, literally torn from their context. The more important the antiquity the less likelihood

there is of its origin being made known. Indeed, there is the more chance of it being deliberately given by the vendor a false context and origin, for the discovery by the authorities of the surreptitious discoverer will lay him open to punishment. Thus a statue secretly exported from Greece may be said by the ultimate vendor to come from Italy or Turkey, since the announcement of illicit traffic in antiquities in any given country or area may increase official vigilance and so hinder further enterprise. Archaeologically, such antiquities have only an intrinsic value, for they connote nothing. Consequently, it is only in works of art or of fine craftsmanship that the illicit excavator traffics, and, as a corollary, any illicit antiquity the place of origin of which is openly stated is at once suspect of being a forgery. In any case, what the vendor says is not and cannot, by the wildest stretch of imagination, be considered as evidence. It is, in fact, in most cases, not so much what the vendor says, for the vendor is usually a dealer in a large way in one of the European or American capitals, but what the original finder told the first middle man, and what he handed on to the next, and so what the ultimate vendor tells the purchaser. Now this, as evidence, would not pass the scrutiny of the most lenient magistrate in a police court. It is not even "what the soldier said," for it is half a dozen times removed from the original source, and even that is tainted. Antiquities without pedigrees must therefore always remain suspect of being forgeries unless they carry their own intrinsic credentials, and to inquire into these is the principal task of the experts of museums. For in this task the museum worker is more highly qualified than any other, in that he acquires, by long usage and continuous practice, a perception for style, form, and material that cannot be in the possession of any but the connoisseur, who is himself engaged in virtually the

same work. The products of the ordinary forger are, therefore, in the last resort left to the judgment of museums, which is only on occasions fallible.

But just as the forger works in silence and secrecy, so does the expert. To publish, in the demonstration of a forgery, the exact reasons why any given object is supposed to be a forgery is to give the forger a gratuitous lesson for the improvement of his art. At times it is all too foolishly done, but, as a rule, an object is condemned for reasons which, while valid enough, rarely get into print, and so into the hands of the forger.

Of forging one generalisation can be safely made. No type of antiquity, the surface of which is likely to be affected by the passage of time, can ever be successfully forged. Thus Palæolithic, and to some extent Neolithic, flint implements, all objects of bronze from life-size statues to small ornaments, some kinds of stone and marble, and in some cases silver, can never be successfully forged simply because the patina, which time alone can give, cannot be copied, imitated, or induced. This is to give away no secret, for all forgers are continuously engaged upon attempts to copy patination, and hardly ever with success. But just as the surfaces of bronze and stone undergo a chemical change by the action of the atmosphere or the soil in the process of time, so certain materials are unalterable and suffer no change save that of attrition. Gold is, of course, the typical instance, and that is why there are more forgeries in gold than in any other material. Its intrinsic worth, also, enhances the value of the object made from it, and, as a material, it is more easy to handle. Because of its high value in proportion to its bulk, it forms one of the most profitable investments. A statue is hard to conceal, but a gold ornament is easy to convey. Hence Etruscan gold jewellery, Scythian and Sarmatian gold and gold coins are frequently forged. The 'Tiara of

Saitarphernes" is a notable instance Silver is, as a rule, less easy to forge, since ancient silver is usually either corroded or patinated, and, even if it is neither, has usually gone through a process of crystallisation internally which is at once perceptible under the microscope

But in the case of ivory, some kinds of stone and marble, and, more rarely, wood, forgery is easy Limestones, coloured marbles, conglomerates, and breccias acquire no patination Parian and Italian marbles retain their surfaces, as a rule, unchanged, but the surface of Pentelic marble usually oxidises through the presence of iron and the patina so acquired cannot be forged Wood and ivory merely decay, and a decayed surface is easily forged by the medium of acid or brushing with a metal brush Ancient glass, on the other hand, can never be forged at all, since time gives it a corroded surface which is perceptible as strong iridescence, and this no chemical or other invention has yet been able to reproduce But in all the unforgeable materials the passage of time must be considerable to produce the protective surface Some fifteen centuries is the minimum Thus Renaissance bronzes and glass, Romanesque and Italian sculpture and many other more recent periods of art are successfully copied by the professional forger

Coins in gold and silver of all ancient periods are more liable to forgery than almost any other antiquities, and few collections have successfully avoided the forger's products This is mainly because the internal structure of silver coins cannot easily be examined without damage to the specimen, and because in the case both of gold and silver the surface attrition, which is to be expected even in small degree on all coins, can be easily faked One famous coin forger used to put his latest batch of coins loose in a bag and attach the bag to the axles of the carriage in which he took his daily ride, others have been

known to put them in the crop of a turkey. This in brief time gave to the coins precisely the same wear and tear which continuous handling in commerce would in reality have given them in the course of years. But no successful coin forgery can be attempted except by the aid of properly cut dies, and it is to the indigent artist that the finest forgeries can always be attributed. The combination of an artist, an expert with archæological knowledge and a cunning dealer presents to the collector a most formidable association for acquirement of his wealth!

CHAPTER V

THE PRESENT AND FUTURE

GENERAL interest on the part of the public and a gradual decrease of prejudice on the part of library students and scholars has led both to the preservation and better care of extant antiquities which cannot in their nature be transported to museums, and to a greater appeal to archæologists for assistance and evidence. The mediæval and Renaissance tradition that scholarship should be confined *exclusively* to studies and carried out by the aid of midnight oil and book- or manuscript research, has persisted vigorously, and, in some cases, with elements of arrogance. But there are limits to textual criticism and purely library research, as most broadminded scholars are nowadays prepared to admit. While it would be foolish to pretend that the study of Cicero, Demosthenes, the Greek tragedians, or, in fact, the bulk of ancient prose literature and poetry, can in any way be affected except the most incidental way by the discoveries of archæology, yet almost all the ancient historians are largely inexplicable without archæological aid and, while the beauty of Homer derives no added lustre from Archæology, yet certain passages are the better understood by reference to the evidence of archæologists and travellers. Grote's *History of Greece*, published in 1846, is to-day, for its earlier parts, obsolete, for, in default of archæological facts, he was driven to resort to the uncertainties of mythology and genealogy, and the main purpose of archæological study in its relation to literature is to give the artistic background on the one hand and the ordinary background on the other, with-

out which literature and history alone can only give a partial account of the ancient world. Nor is it valid to suggest comparison with modern history, for it is often shown that modern and mediæval history derives but slight assistance from archæology and from a study of contemporary art. This cannot be refuted, for the light shed by mediæval and recent archæological and artistic studies is slight, and, indeed, often illuminative only of the backwaters and side-currents of a period, sometimes even it may distort the genuine historical point of view. The reasons are obvious enough. mediæval and modern history has so vastly greater an amount of written record to draw from, so much more illustration of daily life and of the general course of life than Antiquity that it has almost all the sources it requires. Nor, except in some short periods, was art an integral part of the life of the people between the Early Middle Ages and recent times. But in Antiquity, in most countries, artistic interests and production were far more widespread and more understood by the people at large, and, in consequence, art belonged much more to their daily life, so illustrating conditions more favourably than it would in later ages, and, further, only the great authors of antiquity have come down to us. Except for the faint light thrown by inscriptions, tablets, and papyri upon the business methods and the daily occupations of some few communities, we know little or nothing about the activities of daily life in ancient times except what we learn from archæological discovery and record.

To reconstruct the life of, say, the seventeenth century from archæological and artistic records would be to give an account of that century which would be largely if not wholly false, but the same process applied to Greece and Rome would be defective in degree rather than in quality.

There are many *lacunæ* in history which archæology can still hope to fill, and there are still many key

sites at which archæological investigation would contribute more largely than from regional inquiry of a more general nature. St Albans, the ancient Verulam, in England, Balkh in Afghanistan, some of the great deserted sites in the North Caucasus, and Dodona in Greece, are instances of important places which would be relatively more productive and important for their size than many of the smaller sites which are being explored.

The following survey may help students to a realisation both of what is being done and of what remains for achievement.

Great Britain and Ireland—Intense activity has been evident in the last two decades, which has resulted in a study of Romano-British history of great accuracy and scholarship. With the above mentioned exception of Verulam—the site of which is not beneath the modern town—few of the larger sites still await investigation. Silchester, the larger sites on Hadrian's Wall, Wroxeter, Carlisle, Richborough, and parts of York, Colchester, and Chester, have all been excavated and fully investigated. Scores of Roman villas throughout the country are now fully cleared, though there is, all too frequently, a tendency for enthusiastic amateurs to indulge in unauthorised excavations on such sites. Surface research has made it possible now to establish the outlines of the system of Roman roads and of Roman settlements.* In the prehistoric periods, from Palæolithic to Iron Age, sites are fully recorded. The Celtic period is well studied and the Early Iron Age now in process of better inquiry.

Work to be done consists more in the amplification of knowledge than of the addition to it of wholly new material. Nor are there now many *lacunæ* in our history or prehistory of supreme importance.

In Ireland there has been little or no excavation.

* See the new Ordnance Map of Roman Britain (2nd ed.)

Classification of objects of the Bronze Age and the Celtic period is adequate, but scientific archaeological research has not been extensively carried out.

Italy—The major Roman sites are known and largely excavated. The continuation of excavation at Pompeii is now more methodical and more productive. The Etruscan period still awaits greater research both in the interpretation of what has been found and in the accurate excavation of Etruscan sites. The Early Iron Age is in much the same situation, nor is there as much material of the Bronze Age and Neolithic period as might be desired. But the greatest need is the proper excavation of the sites of the Greek cities of Magna Græcia and, to a less degree, of Sicily. It is, indeed, remarkable that no site in Italy of this period, except that of Cumæ, near Naples, has been properly examined. There remain to be explored great cities like Croton and Sybaris, Metapontum and Velia, all of supreme interest. In Sicily more has been done, and the site of Selinus, a perfect example of a Greek city-state of the fourth and fifth centuries, has been well excavated. Motya, a Carthaginian site, Syracuse, and Agragas (Girgenti) have been accurately examined and partly excavated. But there remains much—the sites of Himera, Segesta, Camarina, Leontini, and Naxos, among others, await examination and research. But the collaboration of foreign scholars is rejected, and only surface exploration is allowed them.

Greece—The Greek and prehistoric sites excavated are too numerous to mention here. What remains to be done is more important. In the prehistoric periods there is much. Mainland Helladic sites and island Cycladic sites must still be excavated before our final conclusions on these periods and regions can be firmly established. Minoan sites outside Crete and Mycæan sites outside the mainland must also be sought for. In the north our knowledge of Macedonia, slight as it is, is entirely a post-war growth, since before the

war these regions were closed to inquiry for political reasons. Thrace and Thracian history and prehistory alike are at present almost a sealed book, and the Thracian language hardly known. For the historical period the settlements of the North Ægean demand excavation, and would be productive of unusual results, judging by recent discoveries in those regions. Colonial sites on the Adriatic coast and settlements in the Ionian Islands, as well as in the Sporades and Cyclades, need examination. Ætolia and Acarnania have not been fully examined and may yet be productive of much. Lemnos, Imbros, Samothrace, and the northern Sporades deserve more examination than they have yet received.

Bulgaria and Yugoslavia—In the former country much has been done, though during the war much damage was inflicted upon the antiquities of regions of Greece and Roumania under Bulgarian control. But the prehistory of Bulgaria is better known than its history, at least of the classical period. Many Bronze Age sites have been methodically excavated, but there has been no full-dress excavation of a Greek site in Bulgarian territory, such as the cities that lie upon the Pontic shore. Museum research is adequate, and at Sofia there is a fine National Collection.

Yugoslavia is relatively backward in archaeological research, nor is there much opportunity as yet for scholars to carry out excavations. For the prehistoric periods the present régime inherits the fine work carried out by the Austrians in Bosnia, at Laibach, Zagreb, and along the Dalmatian coast. One scholar, M. Bulitch, has been responsible for the very satisfactory excavation at Salona, near Split, and another, M. Vassitch, for the admirable researches carried out over a space of many years at Vinca, a prehistoric site on the Danube near Belgrade. But the central areas of Old Serbia and the Croatia remain largely unexplored, though their proper investigation would go far

to clear up problems of Greek and Central European archæology

Turkey—Like Greece, Turkey now affords facilities to foreigners, and has been open to excavation for a long time. The known sites already excavated are too numerous to mention. The *lacunæ* are important, but in few cases are they key sites. A survey with excavation of Anatolian prehistory, coupled with the re-excavation of Troy and some neighbouring contemporary sites, is much needed. Smaller prehistoric sites are hardly excavated at all, and our information upon the Neolithic period and the Early Bronze Age and Early Iron Age is negligible. For the better knowledge, for instance, of Phrygian antiquities much might be done by small and inexpensive excavations in North Anatolia. Nor do we, as yet, know anything about South East Asia Minor or of the prehistory of Caria and Lycia, both of which are vital for our better knowledge of Ægean antiquities. Many of the smaller Greek sites on the Ionian coast remain unexplored, even if the major have been excavated, and we know nothing at all except from occasional discovery of the deeply interesting Ionian and Dorian settlements on the Black Sea between the Bosphorus and Batum. In the Hittite sphere more has been done, but a re-excavation of Boghaz Keui is essential. Farther east all is dark, and of early Armenia we know nothing except from occasional and enigmatic isolated discoveries. Nor is there any light from Kurdistan.

Mesopotamia—The astonishing discoveries at Ur should not obscure the fact that much steady and well organised work has been carried out in these parts, and that Nineveh, Assur, and Babylon are excavated sites of great extent, though not investigated by British scholars. The most pressing need now is for the excavation of more Sumerian sites and for the examination of the earliest periods of all, so that the

origin of the Sumerians, at present completely unknown, may be ascertained

India—It is strange that the Indian Empire should have been, until the last four or five years, entirely oblivious of the fact that it possessed a prehistory. It is, in fact, the only highly organised country that has been content to abandon inquiry into its past beyond a period about 1000 B.C. Now, the recent excavations at Mohenjodaro and Harappa in Sind have revealed a culture that belongs to the fourth and third millennia B.C., with contacts in Mesopotamia, at Kish, and farther north at Susa. This culture has provisionally been termed 'Indo-Sumerian,' and boasts a peculiar pictographic script as yet undeciphered.

The patient work carried out for long by the Indian Archaeological Survey in the north west at Greco-Bactrian sites, and the excavation of the important site of Taxila, has widely illustrated Indian culture of the last two centuries before, and the first four after, Christ, when Hellenistic influences were still persistent. The preservation of much Greco-Bactrian and early Indian sculpture has resulted. The more northern connections of these regions with Afghanistan are now under process of inquiry by a French mission. Fine work has also been done by the French School of Far Eastern Antiquities into the early history of the Khmer civilisation in Cambodia.

Russia—Northern Russia and Siberia remain widely unexplored by archaeologists, apart from the recent profoundly interesting discoveries by Colonel Kozlov in Mongolia near Urga, and by Radloff near Minussinsk, both carried out since the war under the control of the Soviet Government. Good work is also being done in South Russia in the further exploration of Greek cities and Scythian and Sarmatian burials, of which our previous knowledge was extensive. Odessa and the Crimea are still greatly productive, and their continued importance is not

being neglected. Prehistoric sites in West Russia still have to be more extensively explored, and for the earliest prehistoric periods we have by no means as much information as we could wish.

Central Asia.—Brief excavations during the course of wide travels and surveys by Sir Aurel Stein have added enormously to our knowledge of the vast regions east of the Pamir and north of Tibet. The same archaeologist and explorer has also surveyed and examined in great detail parts of Western Turkestan, Seistan, and the Upper Indus Valley. At Anau, in Western Turkestan, near Ashkhabad, scientific excavations by an American mission were carried out a few years before the war on a prehistoric site, and the results remain our only knowledge of the prehistory of this fundamentally important area. From the point of view of Sumerian, Scythian, and Indo-European origins, no ground is pregnant with more important results. But it will be long before excavators will be given a free hand in these districts, for their strategic importance militates against anything in the nature of a survey by foreigners, and the Soviet Government is no more likely to welcome alien intrusion into Turkestan than was the Government of the Tsars.

China.—Chinese antiquities are far better known in themselves than in their context. Virtually no scientific excavations have been carried out on Chinese soil until the last few years, when the excavations of a Swede, Dr J. G. Andersson, in Kansu and the western provinces has at last revealed a prehistoric, possibly Neolithic, culture in China not previously known. Its probable connection with the West, via Turkestan and Seistan to Eastern Europe, makes it one of the most interesting of recent Asiatic discoveries. For the Chou, Han, and Tang Dynasties we have the ample evidence of tombs, but next to nothing from a more strictly scientific point of view. Chinese art has, in consequence, been left mainly to the connoisseurs and

art critics Unfortunately, too much has already been taken from tombs for us to hope that the connoisseurs will invoke the assistance of archaeologists, nor is the present condition of the country likely to favour their activities

America—The antiquities of Mexico have been studied extensively by American scholars and antiquaries for many years, but the interest in the culture of the Maya of Central America is of fairly recent growth, and mainly due to the research of British travellers Two men, the artist Catherwood and the scientific explorer Maudsley, first collected by surface survey records of all the extant monuments of the surprising culture of this early American people Recent tentative excavation and further research is in process of adding to our knowledge, but much remains to be done, more particularly as in British Honduras we possess a colony where every phase of the Maya culture is to be found But, as an authority tells us,* "at present this rich field has hardly been touched, and there awaits us an opportunity of making as great a contribution to the elucidation of the origins of American prehistoric civilisation as we have made to those of Greece, Mesopotamia, and Egypt"

Africa—Outside Egypt and the Sudan there are, in northern parts of the continent, the vast Roman and Punic provinces of Algeria, Tunisia, and Morocco, and the well preserved ancient Greek colony of Cyrene The former have been carefully studied for many years by French archaeologists, and excavations have been carried out in many places Large Roman towns like Timgad are found to be in excellent preservation, and the accumulation of knowledge of Roman times gained from these regions is very great Carthage has been partly explored also But the prehistory remains largely a blank

* T. A. Joyce, *Maya and Mexican Art* p. 2

Cyrene has been excellently excavated by Italians, after a preliminary investigation by two British naval officers in 1860 and 1861, which was productive of many fine antiquities. Again, the dry climate of Africa has preserved much, and Cyrene must rank as *one of the more impressive Greek sites*. Elsewhere in Tripolitana further traces of Roman occupation have been cleared.

The southern part of the continent has given much evidence of value for prehistoric culture, and in the last year the curious ruins of Zimbabwe, in Rhodesia, have been submitted to a scientific scrutiny which has finally dispelled the wilder hypotheses which amateurs had attached to them. It seems clear that they are not much more than nine hundred years old, and representative of indigenous culture, perhaps Bantu.

France and Spain—The important Roman remains of these two countries are sufficiently well known and adequately studied not to need description. The Greek settlements, on the other hand, are lamentably unknown. Marseilles, being a large modern city, prevents exploration of the site of Massalia beneath it, but something has been done to collect what scraps of that fine colony have emerged. Of the other Riviera settlements we know next to nothing. In Spain only one Greek site has been excavated—Ampurias, the ancient *Emporion*—and that not well. Of the dozen other Greek colonies that were planted along the east coast of Spain, hardly even the identifications are sure.

Of Spanish and French prehistory we are, on the other hand, excellently informed, and the gaps in our knowledge are slight. It is particularly rich for the Palæolithic periods.

Germany, Scandinavia and Central Europe—The great structure of Central European prehistory needs no comment. Adequate workers and adequate facilities have reconstructed all the prehistoric periods with no little precision. Enormous material has been scien-

tifically handled. So, too, the scantier Roman remains of Germany, Austria, and Hungary have been faithfully recorded and preserved, and the occasional traces of Rome in Scandinavian districts have been noted and fully published. The work to be done consists mainly in establishing the connection between the cultures of Central Europe and the Mediterranean.

These brief notes are not intended to do more than indicate the regions where further work is desirable, and the periods to which students can with greatest profit apply their labours. I have in no sense attempted in so short a space to give an account of all the work that has been done. I have, rather, noted the regions that require more attention and to which the activities of students anxious to make real contributions to knowledge, or of patrons who might wish to inaugurate discoveries of importance, may be diverted.

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